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Notice of Allowability	Application No.	Applicant(s)	
	10/038,882	LUO ET AL.	
	Examiner	Art Unit	
	Jerry T Rahll	2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to applicant's application received 02 January 2002.
2. ☒ The allowed claim(s) is/are 1-28.
3. ☒ The drawings filed on 02 January 2002 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

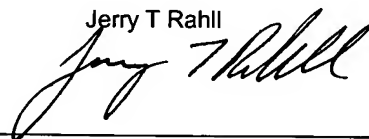
* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

Jerry T Rahll


EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.
2. The application has been amended as follows:
3. The abstract is amended to read, "An inventive method and apparatus is provided by a bidirectional optical 1 x 2 device formed by a cascade of three optical 2 x 2 devices. Each 2 x 2 device is bidirectional where optical signals propagate through the 2 x 2 device in the forward and backward directions simultaneously. The demultiplexing and multiplexing occur simultaneously to thereby perform bidirectional 1 x 2 optical demultiplexing and 2 x 1 optical multiplexing in the 1 x 2 device."
4. In Claim 1, "... receiving a second fourth of optical channels at a first distal end port of the third 2 x 2 device..." is amended to, "... receiving a **fourth subset** of optical channels at a first distal end port of the third 2 x 2 device..."
5. In Claim 3, "The method of claim including the step..." is amended to, "The method of claim 1 including the step..."
6. In Claim 23, "The combined N x 1 optical multiplexer and 1 x N optical demultiplexer, wherein..." is amended to, "The combined N x 1 optical multiplexer and 1 x N optical demultiplexer **of Claim 22**, wherein..."

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7. In Claim 24, “The combined $N \times 1$ optical multiplexer and $1 \times N$ optical demultiplexer, wherein...” is amended to, “The combined $N \times 1$ optical multiplexer and $1 \times N$ optical demultiplexer **of Claim 22**, wherein...”

8. In Claim 25, “The combined $N \times 1$ optical multiplexer and $1 \times N$ optical demultiplexer, wherein...” is amended to, “The combined $N \times 1$ optical multiplexer and $1 \times N$ optical demultiplexer **of Claim 22**, wherein...”

9. In Claim 26, “The combined $N \times 1$ optical multiplexer and $1 \times N$ optical demultiplexer, wherein...” is amended to, “The combined $N \times 1$ optical multiplexer and $1 \times N$ optical demultiplexer **of Claim 22**, wherein...”

10. In Claim 27, “The combined $N \times 1$ optical multiplexer and $1 \times N$ optical demultiplexer, wherein...” is amended to, “The combined $N \times 1$ optical multiplexer and $1 \times N$ optical demultiplexer **of Claim 22**, wherein...”

EXAMINER’S STATEMENT OF REASONS FOR ALLOWANCE

11. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

Drawings

12. The drawings submitted on 02 January 2002 have been reviewed and determined to facilitate understanding of the invention. The drawings are accepted as submitted.

Allowable Subject Matter

13. Claims 1-28 are allowed. Claims 1-28 describe a bidirectional optical multiplexing/demultiplexing device using 2 x 2 couplers where a WDM is received at a first input port at a proximal end of a first 2 x 2 coupler and demultiplexed to output ports at the distal ends of cascaded 2 x 2 couplers and individual signals are received at input ports at the distal ends of the cascaded 2 x 2 couplers and multiplexed to an output port at the proximal end of the first 2 x 2 WDM coupler.

14. U.S. Patent No. 5,074,634 to Takahashi describes an optical demultiplexing device using 2 x 2 couplers. Takahashi does not describe bidirectional use or a WDM is received at a first input port at a proximal end of a first 2 x 2 coupler and demultiplexed to output ports at the distal ends of cascaded 2 x 2 couplers and individual signals are received at input ports at the distal ends of the cascaded 2 x 2 couplers and multiplexed to an output port at the proximal end of the first 2 x 2 WDM coupler.

15. U.S. Patent No. 5,074,634 to Takahashi remains the closest prior art of record in this application. For the reasons stated above, however, Claims 1-28 herein are deemed to patentably distinguish over Takahashi and all other prior art of record.

Conclusion

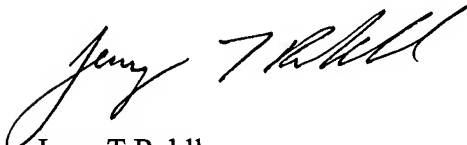
16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patents Nos. 5,652,814, 5,809,190, 6,160,932, 6,208,444, 6,567,581 and 6,366,661 describe optical multiplexing or demultiplexing devices.

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17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry T Rahll whose telephone number is (571) 272-2356. The examiner can normally be reached on M-F (8:00-5:30), with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jerry T Rahll



AKM ENAYET ULLAH
PRIMARY EXAMINER